This analysis aimed to assess if the early switch from IFNB to fingolimod impacts MS clinical outcomes and promotes better resource utilization in a Portuguese hospital perspective. **METHODS:** This analysis was based on TRANSFORMS phase III trial extension data. A cost-effectiveness model was developed to calculate the cost per relapse avoided with 4.5 years of continuous treatment with fingolimod (early treatment) versus 1 year of treatment with IFNB followed by a 3.5 years of treatment with fingolimod (delayed treatment). A Portuguese hospital perspective was adopted addressing only direct costs: drug, monitoring and relapses' treatment. Drug costs were based on Portuguese list prices, while the unit cost of each complication was obtained from the Diagnosis Related Groups tariff. The costs of relapses were derived from the Portuguese literature. **RESULTS:** Assuming there are 819 patients treated with IFNB that are poor responders, the early treatment with fingolimod resulted in more relapses avoided when compared with delayed treatment with fingolimod (2,211 versus 1,843). The early treatment with fingolimod led to an increase of drug acquisition costs, but reduced costs associated to monitoring and relapses' treatment. The total costs were 86,380,820€ for early treatment versus 79,257,091€ for delayed treatment. This represents an average incremental investment of 1,933€ per patient per year. The early strategy resulted an incremental cost effectiveness ratio of 19,358€ per relapse avoided when compared with the delayed strategy. **CONCLUSIONS:** Under the Portuguese hospital perspective, early treatment with fingolimod is expected to result in better clinical outcomes associated with a more efficient health care resources allocation.

PND21

COST ANALYSIS OF TWO AFTERCARE STRATEGIES IN CHRONIC CONTINUOUS INTRATHECAL BACLOFEN THERAPY IN PATIENTS WITH INTRACTABLE SPASTICITY

Burgers LT[1], Goslinga-van der Gaag SME[2], Delhaas EM[2], Redekop WK[3]
[1]*Erasmus University Rotterdam, Rotterdam, The Netherlands,* [2]*Erasmus Medical Center, Rotterdam, The Netherlands,* [3]*Erasmus University, Rotterdam, The Netherlands*

OBJECTIVES: Intrathecal baclofen (ITB) therapy is indicated for use in the management of intractable spasticity. Patients treated with ITB are required to receive a pump refill at least once every three months in the hospital (standard care (SC)). Since SC can be very burdensome for both patients and informal caregivers, an alternative approach (Care4homecare) has been developed which enables patients to receive pump refills at home. Moreover, the use of specially trained nurse practitioners ensures that there is no reduction in effectiveness. We compared the costs of both strategies. **METHODS:** Resource use in both strategies was estimated using observational data of 38 adult patients with spasticity (due to e. g. multiple sclerosis or spinal cord injury) that are currently living at home. We then combined this data with expert opinion and the Dutch costing manual to estimate the total one-year costs from a societal perspective. **RESULTS:** Patients included in the analysis had on average an age of 52±14.4 years, 50% was men and patients scored on average 44±12.5 points on the Care Dependency Scale. The Care4homecare strategy involves care that is almost identical to SC and therefore can result in comparable direct medical costs. However, patients receiving Care4homecare do not incur any travel costs compared with SC patients (€489). In addition, the productivity costs of informal caregivers (SC €195; Care4homecare €40) and of patients treated with Care4homecare are less than the costs of patients receiving SC. From a societal perspective, the total costs of Care4homecare can be lower than that of SC. **CONCLUSIONS:** Care4homecare is an alternative approach to treat patients with intrathecal baclofen that can be cost-neutral from a health care sector perspective and cost-saving from a societal perspective. Moreover, it can be a welcome option for many patients and caregivers who want to avoid the burden of regular hospital visits.

PND22

COST ANALYSIS OF THE USE OF GLATIRAMER ACETATE COMPARED TO INTERFERON-Â IN PATIENTS WITH RELAPSING-REMITTING MULTIPLE SCLEROSIS AND SPASTICITY IN SPAIN

Sanchez de la Rosa R[1], Garcia Bujalance L[2], Meca Lallana J[3]
[1]*Teva Pharma, Madrid, Spain,* [2]*Teva Pharmaceuticals, Madrid, Spain,* [3]*Virgen de la Arrixaca Hospital, Murcia, Spain*

OBJECTIVES: To analyze the costs associated with first-line use of glatiramer acetate (GA) compared to interferon-B (INF-β) in patients with relapsing-remitting multiple sclerosis (RRMS) and spasticity from the perspective of the National Health System of Spain. **METHODS:** A cost analysis of treatment and spasticity management with INF-β compared to GA for 6 months were analyzed. The clinical data were taken from the ESCALA study, which showed an improvement in spasticity in terms of spasm frequencies, muscle tone, and pain 3 and 6 months after the start of GA therapy. Unit costs for the resources used were taken from the BOTPLUS 2.0 database and available literature. The cost analysis is expressed in euros as of 2014, and a price discount of 7.5% was applied as set forth in Spanish Royal Decree 8/2010. **RESULTS:** The costs associated with the management of RRMS, spasticity, and relapses using GA and INF-β were €4,671.31 and €7,078.02, respectively, generating a cost savings of €2,406.72/patient, in favour of GA. **CONCLUSIONS:** The use of AG in the first-line treatment of patients with RRMS not only improves spasticity but it could be a strategy that offers savings cost after 6 months from the start of treatment. To initiate the treatment with AG and keep it in patients with optimal response would be a more efficient treatment option than INF-β.

PND23

SYSTEMATIC REVIEW OF THE ECONOMICS OF MULTIPLE SCLEROSIS IN LATIN AMERICA

Einarson TR[1], Bereza B[1], Machado M[2]
[1]*University of Toronto, Toronto, ON, Canada,* [2]*Biogen Idec, São Paulo, Brazil*

OBJECTIVES: To summarize published articles dealing with economic issues related to multiple sclerosis (MS) in Latin America. **METHODS:** We searched Medline, Embase, Scielo and LILACS using the key words "multiple sclerosis" and "esclerosis múltiple" plus "Latin America" and all country names. Full articles or abstracts from meetings reporting original research on cost or economic analyses, budget impact or resource utilization were obtained. No restrictions were placed on publication date or language. All work was done in duplicate by two independent reviewers with adjudication by consensus discussion. **RESULTS:** We identified 1482 papers, of which 27 were considered for analysis. There were 7 economic analyses (5 cost-effectiveness, 2 cost-utility), 5 budget impact analyses, 10 cost analyses (6 drug expenditures and 4 cost of illness), 4 on resource utilization and 1 on productivity loss. Studies were obtained from 5 countries (18 Brazil, 3 Argentina, 3 Colombia, 2 Mexico, 1 Chile). Mostly (22/27, 81%) were published as abstracts; 5 were published as full text articles (19%). Dates for these publications ranged from 2002 to 2013, with an exponential increase over time. The number of MS patients is increasing rapidly (71% increase in Brazil between 2006 and 2009). However, hospitalization rates (overall and per patient) have been decreasing, as newer more effective drugs have been increasingly used. Disease modulating therapies are predominantly used. Costs of care are quite high and have risen dramatically, e. g. >200% in Brazil between 2007-2012, with beta-interferons mostly used (78%). Some high cost drugs such as fingolimod and natalizumab have been found cost-effective over older drugs such as beta-interferons or glatiramer acetate in Mexico, Brazil and Colombia, with modest impact on budgets. **CONCLUSIONS:** Very little evidence related to cost of MS has been produced in Latin America. More research is needed to better support decisions regarding care of MS patients.

PND24

ALZHEIMER'S DISEASE: MEDICATION COSTS AND IMPACT OF GENERIC SUBSTITUTION

Truter I
Nelson Mandela Metropolitan University, Port Elizabeth, South Africa

OBJECTIVES: Alzheimer's disease has a substantial economic impact on patients, their caregivers and society. There are four cognitive enhancers commonly used in the treatment of Alzheimer's disease: three cholinesterase inhibitors (donepezil, rivastigmine and galantamine) and one NMDA receptor antagonist (memantine). Studies have indicated that the cost of cholinesterase treatment may be offset by savings in other health care costs. **METHODS:** The cost of medication on the South African market for Alzheimer's disease was analysed using June 2014 retail prices with the Defined Daily Dose (DDD) as unit cost indicator. A retrospective drug utilisation study was conducted on prescription data of a medical insurance scheme administrator for 2012. **RESULTS:** The cost per DDD for memantine was R26.20 (20 mg, two 10 mg tablets). For rivastigmine, the cost was R41.02 per DDD and for galantamine R27.72 per DDD (using the most convenient dosage strengths). These three products were all originator products. For donepezil, the originator and three branded generics were available. The cost of the originator was R27.86 per DDD, and for all three generics R16.29 per DDD. Only 32 patients were included in the drug utilisation study since not all medical aids reimburse these products. The average age of patients was 74.17 (SD=9.54) years, with 50% females. Only memantine and donepezil were prescribed. Donepezil accounted for 77.48% of prescriptions (of which 60.93% were generic prescriptions). The average Prescribed Daily Doses (PDDs) were 16.30 (SD=4.92) mg for memantine and 8.73 (SD=2.84) mg for donepezil. The most frequent PDDs for memantine was 20 mg (62.96% of prescriptions) and 10 mg (37.04% of prescriptions), and for donepezil 10 mg (65.96% of prescriptions) and 5 mg (29.79% of prescriptions). **CONCLUSIONS:** More South African studies on Alzheimer's disease treatment cost are needed that include the stage of the disease and adherence to treatment.

PND25

COSTS ASSOCIATED WITH THE USE OF ENZYME-INDUCING ANTI-EPILEPTIC DRUGS VERSUS NON-ENZYME-INDUCING ANTI-EPILEPTIC DRUGS: A SYSTEMATIC REVIEW

Xiong T[1], Gallagher E[2], MacGilchrist KS[1], Thieffry S[2]
[1]*Abacus International, Oxfordshire, UK,* [2]*UCB Pharma, Brussels, Belgium*

OBJECTIVES: Several commonly prescribed enzyme-inducing anti-epileptic drugs (EIAEDs) stimulate the synthesis of some hepatic enzymes responsible for drug metabolism. This synthesis can lead to complications by altering endogenous metabolic pathways or by affecting the elimination of concomitant drugs thus increasing health care costs. This study aimed to systematically review published estimates of direct and indirect costs associated with the use of EIAEDs compared with non-enzyme-inducing anti-epileptic drugs (nEIAEDs) in patients with focal and generalised seizures, and to evaluate methodological differences between the studies. **METHODS:** Comprehensive electronic searches were undertaken using MEDLINE, EMBASE, Cochrane Library, EconLit, relevant conference proceedings and cost effectiveness analysis registries. All studies reporting any direct and indirect costs of AEDs for the treatment of patients with epileptic seizures were included. Study quality assessment was performed for every included study using a predesigned check list. **RESULTS:** Thirty-seven full-length articles and two abstracts reporting costs were reviewed. Two studies reported AED costs, drug-specific adverse event costs and non-drug health care costs subsequent to the initiation of each individual AED (medical visits, MRI scans, etc.). Six studies reported specific AED costs and the overall subsequent non-drug health care cost without stratification by event. Eighteen studies reported AED acquisition costs but did not report any other subsequent AED-related health care costs stratified by treatment. Thirteen studies reported the whole cost of illness with only a list of AEDs included. To date, no study has been specifically designed to compare the total costs between EIAED and nEIAED use, although some studies compared direct and indirect costs of several newer AEDs versus older AEDs. **CONCLUSIONS:** Insufficient data and heterogeneity in methodology prevent valid comparisons being made between the total cost of EIAEDs and nEIAEDs. More research is required to identify if meaningful differences in the total cost of treatment exist between EIAEDs and nEIAEDs.

PND26

PHARMACOECONOMIC STUDY OF BOTULINIUM TOXIN TYPE A IN TREATMENT OF POST-STROKE SPASTICITY IN THE RUSSIAN FEDERATION: COST-EFFECTIVENESS ANALYSIS

Yagudina R, Kulikov A, Ugrekhelidze D
I.M. Sechenov First Moscow State Medical University, Moscow, Russia

OBJECTIVES: To assess the cost-effectiveness of abobotulinumtoxinA, onabotulinumtoxinA, incobotulinumtoxinA and local standard therapy (oral muscle relaxers) in patients with post-stroke spasticity in Russia for 1-year period. Physical therapy was used in all therapy schemes. **METHODS:** A decision tree was used to simulate the effects of abobotulinumtoxinA, onabotulinumtoxinA, incobotulinumtoxinA and standard therapy. The data on drugs efficacy (measured as decrease in the Modified Ashworth scale (MAS) score) was obtained from available clinical trials [1-3]. The following costs were taken into account:, the costs of BTA and other drugs, costs of inpatient and outpatient care in the Russian Federation, costs of adverse events, disability pensions, GDP loss due to post-stroke spasticity. Costs of BTA and other drugs were taken from the essential drug list and the database of drugs prices. Medical care costs were estimated from the Standard of treatment of stroke consequences developed by Ministry of Health of the Russian Federation. Costs of adverse events were calculated basing on Russian clinical guidelines and database of drugs prices. Disability pensions were taken from Russian Pension Fund database. GDP loss was based on the GDP information from World Bank. Cost-effectiveness ratio (CER) of BTA and standard therapy was calculated and compared in four treatment schemes. **RESULTS:** Therapy with abobotulinumtoxinA showed most prominent decrease of Modified Ashworth score equal to 1,67, as for onabotulinumtoxinA – 1,17, incobotulinumtoxinA – 0,87, standard therapy – 0,67. The calculated CER in USD per 1 spasticity decrease point according to MAS was lowest for abobotulinumtoxinA (389524 RUB/11356 $) in comparison with onabotulinumtoxinA (635631 RUB/18532 $); incobotulinumtoxinA (798750 RUB/23287 $) and standard therapy (873312 RUB/25461 $). **CONCLUSIONS:** Therapy conversion to abobotulinumtoxinA comparing with standard therapy, onabotulinumtoxinA and incobotulinumtoxinA was associated with decrease of spasticity. Transfer to abobotulinumtoxinA is considered cost-effective in patients with post-stroke spasticity, given a cost-effectiveness ratio 389524 RUB/11356 $.

PND27

COST COMPARISON OF DEEP DRAIN STIMULATION (DBS) AND CONTINUED SUBCUTANEOUS APOMORPHINE INFUSION (CSAI) IN PATIENTS WITH ADVANCED PARKINSON'S DISEASE

Walleser Autiero S[1], Eggington S[1], Valyi A[2]
[1]*Medtronic International Trading Sarl, Tolochenaz, Switzerland,* [2]*Medtronic Ltd UK & Ireland, Watford, UK*

OBJECTIVES: Deep Brain Stimulation (DBS) for the treatment of advanced Parkinson's Disease (PD) is a therapy supported with high level evidence, however no direct comparative studies exist of DBS against other therapy options, such as continued subcutaneous apomorphine infusion (CSAI) exists. The objective of this study was to evaluate the 5-year cost profiles of two therapies for advanced PD, DBS and CSAI, from a UK payer perspective. **METHODS:** A Markov model, previously used to model cost-effectiveness of DBS+BMT vs BMT alone (Eggington 2013), served to evaluate the cost profile of DBS and CSAI over five-years. Equal efficacy of the two therapies was assumed. The cost analysis covered: device acquisition, implantation, adverse event management, concomitant drug use, device replacements and follow-up. Cost data were taken from UK national tariffs, combined with device/drug price lists and data from previous economic studies of interventions for PD. Disease-related inputs were based on recent studies of DBS and CSAI in patients with advanced PD, plus long-term data from the literature. Costs were discounted at 3.5% per annum. **RESULTS:** Total discounted costs over 5 years were £69,566 and £80,843 for DBS and CSAI, respectively, leading to cost savings of £11,277 of DBS compared to CSAI over 5 years. DBS is cost saving compared to CSAI from 3 years onwards, with the initial costs of DBS device acquisition shown to be offset by the on-going provision of CSAI. **CONCLUSIONS:** The results indicate that DBS requires less health care resources than CSAI over five-years. Comparative clinical data are needed to formally assess the relative cost-effectiveness of the two interventions.

PND28

RETROSPECTIVE ANALYSIS OF THE ECONOMIC BURDEN OF U. S. LONG-TERM CARE FACILITY RESIDENTS DIAGNOSED WITH PARKINSON'S DISEASE

Huang A[1], Shrestha S[1], Baser O[2], Wang L[1]
[1]*STATinMED Research, Plano, TX, USA,* [2]*STATinMED Research and The University of Michigan, Ann Arbor, MI, USA*

OBJECTIVES: To examine the health care utilizations and costs of long-term care facility patients diagnosed with Parkinson's disease (PD). **METHODS:** Patients diagnosed with PD (International Classification of Disease, 9thRevision, Clinical Modification [ICD-9-CM] diagnosis code 332) were identified using the Minimum Data Set (MDS) linked to 5% Medicare data from 01JAN2009 through 31DEC 2010. The initial diagnosis date was designated as the index date. A comparison cohort was created for patients without a PD diagnosis, using 1: 1 propensity score matching (PSM) to control for age, region, gender, index year and baseline Charlson Comorbidity Index score. The index date for the comparison group was randomly chosen to reduce selection bias. Patients in both cohorts were required to be at least age 65 years, have at least two consecutive quarterly assessments in MDS data in the 6 months prior to the index date, and have continuous medical and pharmacy benefits 1 year before and after index date. Study outcomes, (health care costs and utilizations) were compared between the disease and comparator cohorts, based on the matched sample. **RESULTS:** After applying PSM, a total of 986 patients were included in each group (diseased and comparator cohorts), and baseline characteristics were balanced. A higher percentage of patients with PD had inpatient admissions (35.09% vs. 30.32%, p=0.02), outpatient visits (93.91% vs. 89.45%, p<0.001) and durable medical equipment (DME) utilization (27.69% vs. 21.91%, p<0.01), compared to those without a PD diagnosis. The PD cohort also incurred significantly higher skilled nursing facility ($6,458 vs. $5,182, p=0.03), DME ($344 vs. $206, p<0.01) and pharmacy costs ($6,025 vs. $4,998, p<0.0001) compared to the comparison cohort. **CONCLUSIONS:** Study results suggest that patients diagnosed with PD incurred significantly higher costs and had higher resource utilization than those without a PD diagnosis.

PND29

RELATIONSHIP BETWEEN THE DIRECT MEDICAL COSTS AND DIRECT NON-MEDICAL COSTS OF PARKINSON'S DISEASE ACCORDING TO DISEASE SEVERITY DURING 4 YEARS OF FOLLOW-UP IN SPAIN

Martinez P[1], Rodriguez-Blazquez C[1], Paz S[2], Lizán L[3], Forjaz MJ[4], Frades B[5], Moreno R[6]
[1]*National Center for Epidemiology and CIBERNED, Carlos III Institute of Health, Madrid, Spain,* [2]*Outcomes'10, Castellon, Spain,* [3]*Outcomes 10, Castellon, Spain,* [4]*National School of Public Health and REDISSEC, Carlos III Institute of Health, Madrid, Spain,* [5]*Alzheimer Center Reina Sofia Foundation, Carlos III Institute of Health, Madrid, Spain,* [6]*Infanta Cristina Hospital, Madrid, Spain*

OBJECTIVES: To describe the medical and non-medical direct costs of PD in relation to the total direct cost and its variation with disease severity during 4 years of follow-up. **METHODS:** A descriptive, observational, longitudinal study in PD patients belonging to the ELEP study (2007-2010). Data on disease severity and use of resources were collected for three consecutive months, yearly, for 4 years. Direct medical (funded medical equipment, medications and medical assistance) and direct non-medical costs (alternative care, home assistance, non-funded medical equipment and medications) for 4 years depending on severity by Hoehn and Yahr (HY) was described. Costs were estimated by multiplying rates obtained from the database Oblikue (http://www.oblikue.com) and pharmacy costs from the BotPlus Web (https://botplusweb.portalfarma.com) by the number of resources used, updated to Spanish €, 2012. **RESULTS:** 198 patients were included. Average age: 63±11 years, 50% male, mean PD duration of 8±6 years. Mild (HYI-II) and moderate (HYIII) PD varied from 76% and 21% to 64% and 29%, respectively during follow-up. Total direct cost was higher in severe stages, being in year 4, €1,477.32 HYI (95%CI: 219.55-2,735.10) and €3,606.66 HYIV (95%CI: 893.97-6,319.35) compared to year 1, €1,093.32 HYI (95%CI: 624.99-1,561.65) to €2,656.27 HYIV (95%CI: -53.14-5,365.68). Direct medical costs ranged from €886.62 (95%CI: 475.13-1,298.11) HYI and €2,376.30 HYIV (95%CI: -53.12-4,805.73) in year 1 to €909.96 HYI (95%CI: 942.43-1,327.49) and €2,768.49 HYIV (95%CI: 34.21-5,502.76) at year 4. Direct non-medical cost variation were determined by PD temporal evolution, increasing between year 1 and 4 within each stage, €723.47 to €4,255.20 HYI and €653.27 to €1,676.35 HYIV. **CONCLUSIONS:** The economic burden of PD rises with duration and severity of the disease, progressively increasing the direct, medical and non-medical costs. Besides to improve patients' HRQoL, therapies aimed at controlling the symptoms severity will favor a more efficient management of the disease.

PND30

DOES CURRENT PORTUGUESE FINANCING MODEL FOR MULTIPLE SCLEROSIS COVERS FOR ESTIMATED NEEDS?

Montóia B[1], Guerreiro T[1], Viana R[2]
[1]*Novartis Farma – Produtos Farmaceuticos S. A., Porto Salvo, Portugal,* [2]*Novartis Farma-Produtos Farmacêuticos S. A., Portugal, Porto Salvo, Portugal*

OBJECTIVES: Portuguese financing model set for Multiple Sclerosis (MS) establishes a comprehensive price of 1.031,65€ per remitting patient/month. This study aimed to estimate global and individual direct costs of MS in Portugal and evaluate the coverage of MS Financing model for Relapsing-Remiting Multiple Sclerosis (RRMS) patients. **METHODS:** A cost-of-illness (COI) approach was taken to assess direct costs/per RRMS patient by EDSS level, both for remission and relapse status using Delphi methodology for clinical practice measurement. Portuguese epidemiological data available for prevalence and relative distribution by EDSS level was used to estimate global MS costs and an average cost per RRMS patient. **RESULTS:** The global cost for RRMS in Portugal is estimated to be approximately 83M€/year for patients treated with 1st line Disease Modifying Therapies (DMT). Relapse treatment costs account for 8M€. Direct costs estimated per disability level show that disability levels are directly related with expenditure in RRMS patients in remission (EDSS≤3: 10.754,90€; 3,5≤EDSS≤4,5: 20.113,99€; 5≤EDSS≤6: 21.170,36€; EDSS≥6,5: 24.945,94€). The same was observed for relapse cost (EDSS≤3: 4.952,23€; 3,5≤EDSS≤4,5: 5.568,49€; 5≤EDSS≤6: 8.801,03€; EDSS≥6,5: 9.265,31€). An average cost of 14.563,48€ per RRMS patient was estimated based on Portuguese EDSS epidemiological distribution. **CONCLUSIONS:** Current comprehensive financing model per patient does not cover the costs associated with an average RRMS patient. We demonstrated that considering the epidemiological distribution per EDSS level there is a gap of 2.183,68€ (14.563,48€ vs. 12.379,80€). In addition, it was estimated that 2nd line high efficacy treatments (additional investment of 76% in treatment costs) may lead up to 4.3M€ savings in relapse treatment total costs by reducing annualized relapse rate. Further studies should be developed to assess the budget impact of 2nd line high efficacy treatments on disability progression since lower EDSS scales are associated with less expenditure per patient (EDSS≤ 3: 10.754,90€ vs EDSS ≥ 6,5: 24.945,94€).

PND31

PHARMACOECONOMIC ASPECTS OF MULTIPLE SCLEROSIS TREATMENTS IN IRAN

Khanizadeh H[1], Izham M[2], Nikkhah K[3]
[1]*UNIVERSITY SAINS MALAYSIA, Penang, Malaysia,* [2]*Universiti Sains Malaysia, Pinang, Palau Pinang, Malaysia,* [3]*Mashhad University of Medical Sciences, Mashhad, Khorasan, Iran*

OBJECTIVES: Multiple Sclerosis (MS) is a chronic and progressive which represents a catastrophic payment to patient, society and health care system. Iran, differing to the other countries in Middle- east, is considered to have a medium to high prevalence of MS. Although much is known about the MS cost in the world, there is a very paucity of the MS cost study in Iran. The aim of study was to estimate the costs and QOL in MS individuals and determine whether these costs increase as disability progress. **METHODS:** We studied 160 MS patients who attended in the MS